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EXAMINER
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CHEUNG, MANKO

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/572,718	<b>Applicant(s)</b> FUJIWARA, YOSHIYASU	
	<b>Examiner</b> Manko Cheung	<b>Art Unit</b> 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Specification***

1. Previous specification objections are withdrawn in view of Applicant's Amendment filed on August 12, 2009.

***Claim Rejections - 35 USC § 112***

2. Previous 35 USC 112 rejections are withdrawn in view of Applicants Amendment filed on August 12, 2009.

***Double Patenting***

3. Previous Double Patenting rejection is withdrawn in view of Applicant's Amendment filed on August 12, 2009. The Applicant informed the office that the conflicting claims in the co-pending application No. 10/572,760 are cancelled. The Examiner confirmed.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 2 and 4, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (Patent Application Publication No. 20020052716) in view of Agata (Patent Application Publication No. 20020153004).**

**Regarding claim 1**, Fujiwara discloses a method of diagnosing a system, comprising the steps of: determining a total amount of steam loss which can be solved by a predetermined system improvement in the evaluation target steam piping (*Fujiwara, page 6, paragraph 0085*).

Fujiwara is silent as to determining a total amount of steam loss which can be solved by a predetermined system improvement in the evaluation target steam piping **as a total improvable steam loss amount (Qx - Qxx) based on said determined total amount of steam loss**

However, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the total improvable steam loss amount corresponds to the total amount of steam loss because the steam loss is the amount of steam that could be reduced, in another word, improved in any system.

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**Also**, Fujiwara does not disclose a method of diagnosing a system, comprising the steps of:

determining a total receiving steam amount ( $Q_i$ ) which is a total amount of steam supplied to an evaluation target steam piping and a total necessary steam amount ( $Q_o$ ) which is a total amount of steam required by a steam-using device in the evaluation target steam piping.

Agata discloses that the total receiving steam amount which is a total amount of steam supplied to an evaluation target steam piping (paragraph 0081, line 11-14) and a total necessary steam amount which is a total amount of steam required by a steam using device (figure 3, element 22, 26 and 77) in the evaluation target steam piping (paragraph 0081, line 5-9).

**Moreover**, Fujiwara does not disclose the step of obtaining a ratio  $((Q_x - Q_{xx}) / Q_x)$  of said total improvable steam loss amount ( $Q_x - Q_{xx}$ ) relative to the total unknown steam amount ( $Q_x = Q_i - Q_o$ ) which is the difference between the total receiving steam amount ( $Q_i$ ) and the total necessary steam amount ( $Q_o$ ) as an improvable unknown steam ratio ( $K_{ts} = (Q_x - Q_{xx}) / Q_x$ );

Agata also discloses that the amounts of steam distributed to each of the heat exchangers 22, 26 and 27 are determined based on an output ratio (paragraph 0081, line 13-15) and this ratio is the relationship between the steam generated by the solar thermal collector (figure 3, element 10) and the steam used by the heat exchangers (figure 3, element 22, 26 and 77).

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Since the ratio of generated and used steam could be found, as taught by Agata, the improvable unknown steam ratio could also be found; it is found from the improvable steam loss amount as taught by Fujiwara and the total unknown steam amount as taught by Agata. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to realize that the improvable unknown steam ratio in the device of Fujiwara, because the ratio was calculated based on the generated and used steam as taught by Agata; so that diagnosing result could be presented in terms of fraction.

**Regarding claim 2**, Fujiwara discloses the system diagnosing method wherein the method further comprises a step of performing a trap operation diagnosis on a plurality of evaluation target steam traps mounted in the evaluation target steam piping (*paragraph 0080, line 8-11*);

based on a result of the trap operation diagnosis, calculating a total trap-passed steam loss amount ( $Q_t''$  or  $Q_t$ ) obtained by aggregating trap-passed steam loss amounts for the total number of evaluation target steam traps (*paragraph 0085, line 1-7*).

Fujiwara does not explicitly disclose the step of using said total trap-passed steam loss amount ( $Q_t''$  or  $Q_t$ ) as the total improvable steam loss amount ( $Q_x - Q_{xx} = Q_t''$  or  $Q_t$ ) to obtain the improvable unknown steam ratio ( $K_{ts} = (O_x - O_{xx}) / Q_x = (Q_t'' / Q_x)$  or  $(Q_t / Q_x)$ ),

However, Agata discloses that the amounts of steam distributed to each of the heat exchangers 22, 26 and 27 are determined based on an output ratio (paragraph 0081, line 13-15) and this ratio is the relationship between the steam generated by the solar thermal collector (figure 3, element 10) and the steam used by the heat exchangers (figure 3, element 22, 26 and 77).

Since the ratio of generated and used steam could be found, as taught by Agata, the improvable unknown steam ratio could also be found; it is found from the improvable steam loss amount as taught by Fujiwara and the total unknown steam amount as taught by Agata.

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the total improvable steam loss amount corresponds to the total trap-passed steam loss amount in the device of Fujiwara because the trap-passed steam loss amount is the steam that could be reduced, in another word, improved in any system. It would also be obvious to use the improvable steam loss amount to obtain the improvable unknown steam ratio, because the ratio was calculated based on the generated and used steam as taught by Agata. The combined teaching of Agata with Fujiwara would result a determination of steam loss that could be presented in terms of fraction.

**Regarding claim 4**, Fujiwara discloses a method of operating an aggregating system for system diagnosis having an inputting means (figure 2, element 7a and 7b) and calculating means (figure 2, element 7c), the method comprising the steps of:

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receiving, by said inputting means (figure 2, element 7a and 7b), inputs of result of a trap operation diagnosis performed by a trap diagnotor for diagnosing operational conditions of a plurality of evaluation target steam traps mounted in an evaluation target steam piping (paragraph 0084, line 1-7) and inputs a total receiving steam amount and a total necessary steam amount of the evaluation target steam piping (paragraph 0084, line 7-12); calculating, by said calculating means (figure 2, element 7c) and based on the result of the trap operation diagnosis inputted to the inputting means, a total trap-passed steam loss amount obtained by aggregating trap-passed steam loss amounts for all the evaluation target steam traps (paragraph 0086, line 1-13); based on the total receiving steam amount and the total necessary steam amount or the total unknown steam amount inputted to the inputting means, calculating the total trap-passed steam loss amount (paragraph 0085, line 1-7).

Fujiwara does not disclose a step of calculating a ratio of the total trap-passed steam loss amount relative to the total unknown steam amount which is the difference between the total receiving team amount and the total necessary steam amount, as an improvable unknown steam ratio.

However, Agata discloses that the total receiving steam amount which is a total amount of steam supplied to an evaluation target steam piping (paragraph 0081, line 11-14) and a total necessary steam amount which is a total amount of steam required by a steam using device (figure 3, element 22, 26 and 77) in the evaluation target steam piping (paragraph 0081, line 5-9). Thus, the total unknown steam amount could be found.



It would have been obvious to a person of ordinary skill in the art at the time of invention to calculate the total unknown steam amount, as taught by Agata and use with the method on Fujiwara, so that the ratio, also known as the improvable unknown steam ratio, could be calculated and be presented in terms of fraction for better understanding on the amount of steam is being distributed to the steam using device as taught in Agata.

**6. Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (Patent Application Publication No. 20020052716) in view of Agata (Patent Application Publication No. 20020153004) as applied to claim 1 above, and further in view of Nagase (WO 02/066950, also see U.S. Application Publication No. 20040122602 for English translation) (insofar as understood).**

**Regarding claim 3**, the modified method of Fujiwara disclose that the system diagnosing method comprises a step of performing a steam leakage diagnosis for diagnosing steam leakage from respective piping portions of the evaluation target steam piping:

based on a result of the trap operation diagnosis, calculating a total trap-passed steam loss amount ( $Q_t''$  or  $Q_t$ ) obtained by aggregating trap-passed steam loss amounts for the total number of evaluation target steam traps (*paragraph 0085, line 1-7*).

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Fujiwara fails to disclose that the method is based on a result of the steam leakage diagnosis, calculating a total steam leakage loss amount ( $Q_s$ ) obtained by aggregating steam leakage loss amounts from the respective piping portions

Nagase discloses the system diagnosing method comprises a step of performing a steam leakage diagnosis for diagnosing steam leakage from respective piping portions of the evaluation target steam piping (paragraph 0075, line 1-4, also see figure 2); calculating a total steam leakage loss amount obtained by aggregating steam leakage loss amounts from the respective piping portions (paragraph 0081, line 1-5).

Nagase also discloses that the leakage diagnoses could also be performed on a steam trap (paragraph 0109, line 1-7).

It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to use the teaching, as taught by Nagase, with the modified method of Fujiwara so that the total steam loss and the ratio which is due to the leakage in the piping system and the leakage due to defected trap as shown by Nagase, could be determined and accurately presented.

The modified method of Fujiwara discloses the variable ( $Q_x - Q_{xx}$ ) [see claim 1 by Fujiwara],  $Q_s$  and  $Q_t$  [see above by Fujiwara in view of Nagase].

The modified method of Fujiwara is silent as to using these variable to obtain the improvable unknown steam loss ratio ( $K_{ts} = (Q_x - Q_{xx}) / Q_x = Q_{ts} / Q_x = (Q_t'' + Q_s) / Q_x$  or  $(Q_t + Q_s) / Q_x$ ).

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Agata discloses that the amounts of steam distributed to each of the heat exchangers 22, 26 and 27 are determined based on an output ratio (paragraph 0081, line 13-15) and this ratio is the relationship between the steam generated by the solar thermal collector (figure 3, element 10) and the steam used by the heat exchangers (figure 3, element 22, 26 and 77).

Since the ratio of generated and used steam could be found, as taught by Agata, such improvable unknown steam ratio could be found, the ratio determining method as shown in Agata is used as a generic teaching. The ratio is found using the variable ( $Q_x - Q_{xx}$ ) [see claim 1 by Fujiwara],  $Q_s$  and  $Q_t$  [see above by Fujiwara in view of Nagase].

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to realize that the improvable unknown steam ratio in the device of Fujiwara using the generic teaching of Agata, because such modification allow the diagnosing result to be presented in terms of fraction.

**7. Claim 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (Patent Application Publication No. 20020052716) in view of Agata (Patent Application Publication No. 20020153004), and further in view of Nagase (WO 02/066950, also see U.S. Application Publication No. 20040122602 for English translation) (insofar as understood).**

**Regarding claim 5**, the modified method of operating an aggregating system of Fujiwara discloses a method of operating an aggregating system for system diagnosis

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having an inputting means (figure 2, element 7a and 7b) and calculating means (figure 2, element 7c), the method comprising the steps of:

receiving, by said inputting means (figure 2, element 7a and 7b), inputs of result of a trap operation diagnosis performed by a trap diagnotor for diagnosing operational conditions of a plurality of evaluation target steam traps mounted in an evaluation target steam piping (paragraph 0084, line 1-7) and inputs a total receiving steam amount ( $Q_i$ ) and a total necessary steam amount of the evaluation target steam piping ( $Q_o$ ) (*Fujiwara, paragraph 0084*),

calculating, by said calculating means (figure 2, element 7c) and based on the result of the trap operation diagnosis inputted to the inputting means, a total trap-passed steam loss amount ( $Q_t''$  or  $Q_t$ ) obtained by aggregating trap-passed steam loss amounts for all the evaluation target steam traps (paragraph 0086, line 1-13).

The modified method of operating an aggregating system does not disclose a step of receiving inputs of results of a steam leakage diagnosis performed by a leakage diagnotor for diagnosing steam leakage from respective piping portions of the evaluation target steam piping; calculating, by said calculating means and based on a result of the steam leakage diagnosis inputted to the inputting means, a total steam leakage loss amount obtained by aggregating steam leakage loss amounts from the respective piping portions.

However, Nagase discloses the step of receiving inputs of results of a steam leakage diagnosis performed by a leakage diagnotor for diagnosing steam leakage from

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respective piping portions of the evaluation target steam piping (paragraph 0091, line 1-6). It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to use the leakage diagnosing method, as taught by Nagase, with the modified method of operating an aggregating system as taught by Fujiwara, so that the system receive not only the trap-passed steam loss amount but also the leakage steam loss amount.

Moreover, Fujiwara does not disclose a step of calculating a ratio ( $Q_{ts} / Q_x$ ) of a sum total steam loss amount ( $Q_{ts} = Q_{t''} + Q_s$ ) or ( $Q_t + Q_s$ ) relative to the total unknown steam amount ( $Q_x$ ) which is the difference between the total receiving steam amount ( $Q_i$ ) and the total necessary steam amount ( $Q_o$ ) as an improvable unknown steam ratio ( $K_{ts} = (Q_x - Q_{xx}) / Q_x = Q_{ts} / Q_x = (Q_{t''} + Q_s) / Q_x$  or  $(Q_t + Q_s) / Q_x$ ), said sum total steam loss amount ( $Q_{ts} = (Q_{t''} + Q_s)$  or  $(Q_t + Q_s)$ ) being a sum of the total trap-passed steam loss amount ( $Q_{t''}$  or  $Q_t$ ) and the total steam leakage loss amount, ( $Q_s$ ), based on the total receiving steam amount ( $Q_i$ ) and the total necessary steam amount ( $Q_o$ ) or the total unknown steam amount ( $Q_x$ ) inputted to the inputting means and calculating a ratio ( $Q_x / Q_i$ ) of the total unknown steam amount ( $Q_x$ ) relative to the total receiving steam amount ( $Q_i$ ) and a ratio ( $Q_{xx} / Q_i$ ) of a total basis unknown steam amount ( $Q_{xx}$ ) relative to the total receiving steam amount ( $Q_i$ ) as an unknown steam ratio ( $K_x = Q_x / Q_i$ ) and an apparent improved unknown steam ratio ( $K_{xx}' = Q_{xx} / Q_i = (Q_x - (Q_{t''} + Q_s)) / Q_i$  or  $(Q_x - (Q_t + Q_s)) / Q_i$ ), respectively, said total basis unknown steam amount ( $Q_{xx} = Q_x - Q_{ts} = Q_x - (Q_{t''} + Q_s)$  or  $Q_x - (Q_t + Q_s)$ ) being a value obtained by subtracting the sum

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total steam loss amount ( $Q_{ts} = (Q_{t''} + Q_s)$  or  $(Q_t + Q_s)$ ) from the total unknown steam amount ( $Q_x$ ).

However, Nagase discloses that the total steam leakage loss amount is determined (paragraph 0095) and Agata discloses the total unknown steam amount which is the difference between the total receiving steam amount which is the total amount of steam supplied to an evaluation target steam piping (paragraph 0081, line 11-14) and a total necessary steam amount which is a total amount of steam required by a steam using device (figure 3, element 22, 26 and 77) in the evaluation target steam piping (paragraph 0081, line 5-9).

It would be obvious for a person of ordinary skill in the art at the time of the invention to combine the calculated results, as taught by Nagase, with the trap-passed steam loss result as taught by Fujiwara, so that the defective steam traps and the leakage of piping portions of a system are taken into consideration when calculating the sum total steam loss amount. Furthermore, it would be obvious to use the above modified teaching with the method as taught by Agata, so that the ratio is being calculated based on the relation of the sum total steam loss amount and the total unknown steam amount for better understanding of what fraction of steam is actually loss.

**Regarding claim 6**, Fujiwara further comprises a step of performing a data generating step, based on the calculation results of the calculating means, by a data

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generating means included in the aggregating system for system diagnosis for generating evaluation data (paragraph 0094, line 1-8).

Fujiwara also discloses a content indicative but does not explicitly disclose that contents indicative consists of at least the total unknown steam amount and the improvable unknown steam ratio.

However, Agata teaches a method for determining the total unknown steam amount and the improvable unknown steam ratio (paragraph 0081, line 9-15).

It would be obvious to a person of ordinary skill in the art at the time of the invention was made to include the total unknown steam amount and the improvable unknown steam ratio, as taught by Agata, in the content indicative of Fujiwara so that the evaluation data includes information as how the lump-sum replacement cost is being calculated.

**8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (Patent Application No.20020052716) (insofar as understood).**

Fujiwara discloses an aggregating system for system diagnosis, comprising: inputting means (figure 2, element 7a, 7b) for receiving input from a trap diagnotor of result of a trap operation diagnosis performed by the trap diagnotor (paragraph 0084, line 1-7, also see figure 2, element 3) for diagnosing operational conditions of a plurality of evaluation target steam traps mounted in an evaluation target steam piping (paragraph 0080, also see figure 1); calculating means for calculating (figure 2, element 7c), based on the trap operation diagnosis result inputted to the inputting means, a total

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trap-passed steam loss amount obtained by aggregating trap-passed steam loss amounts for all the evaluation target steam traps (paragraph 0102, line 1-4);

Fujiwara does not disclose an inputting means for receiving inputs of total receiving steam amount and total necessary steam amount of the evaluation target steam piping; and based on the total receiving steam amount and the total necessary steam amount, said calculating means further calculating a ratio of the total trap-passed steam loss amount relative to the total unknown steam amount which is the difference between the total receiving steam amount and the total necessary steam amount as an improvable unknown steam ratio.

However, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the inputting means, as taught in Fujiwara could also receive the inputs of the total receiving steam amount and the total necessary steam amount, because the inputting means disclosed in Fujiwara is a computer and any person of ordinary skill in the art would reasonably expect the computer, the inputting means, would receive any known value. In this case, the known values are the total receiving steam amount and the total necessary steam amount.

Furthermore, a person of ordinary skill in the art would recognize that the calculating means (figure 2, element 7c), as taught in Fujiwara, would also calculate a ratio of the total trap-passed steam loss amount relative to the total unknown steam amount, because the calculating means disclosed in Fujiwara is a computer and any person of ordinary skill in the art would reasonably expect the computer would calculate



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any ratio of two given objects. In this case, the given objects are the total trap-passed steam loss amount and the total unknown steam amount. A ratio is simply a relationship between two quantities and expressed as a quotient of one divided by the other. Therefore, the calculating means disclosed by Fujiwara is able to calculate a ratio, a division of two quantities.

**9. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara (Patent Application No.20020052716) in view of Nagase (WO 02/066950, also see U.S. Application Publication No. 20040122602 for English translation) (insofar as understood).**

Regarding claim 8, Fujiwara discloses an aggregating system for system diagnosis, comprising: inputting means (figure 2, element 7a, 7b) for receiving input from a trap diagnotor of result of a trap operation diagnosis performed by the trap diagnotor (paragraph 0084, line 1-7, also see figure 2, element 3) for diagnosing operational conditions of a plurality of evaluation target steam traps mounted in an evaluation target steam piping (paragraph 0080, also see figure 1); calculating means for calculating (figure 2, element 7c), based on the trap operation diagnosis result inputted to the inputting means, a total trap-passed steam loss amount obtained by aggregating trap-passed steam loss amounts for all the evaluation target steam traps (paragraph 0102, line 1-4);

Fujiwara does not disclose an inputting means for receiving inputs of total receiving steam amount and total necessary steam amount of the evaluation target steam piping; based on the total receiving steam amount and the total necessary steam amount, said calculating means further calculating a ratio of a sum total steam loss amount relative to the total unknown steam amount which is the difference between the total receiving steam amount and the total necessary steam amount as an improvable unknown steam ratio, said sum total steam loss amount being a sum of the total trapped steam loss amount and the total steam leakage loss amount.

However, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the inputting means (figure 2, element 7a, 7b), as taught in Fujiwara could also receive the inputs of the total receiving steam amount and the total necessary steam amount, because the inputting means (figure 2, element 7a, 7b) discloses in Fujiwara is a computer and any person of ordinary skill in the art would reasonably expect the computer, the inputting means, would receiving any known value. In this case, the known values are the total receiving steam amount and the total necessary steam amount.

A person of ordinary skill in the art would also recognize that the calculating means (figure 2, element 7c), as taught in Fujiwara, would also calculate a ratio of the sum total steam loss amount relative to the total unknown steam amount, because the calculating means (figure 2, element 7c), discloses in Fujiwara is a computer and any person of ordinary skill in the art would reasonably expect the computer would calculate any ratio of two given objects. In this case, the given objects are the sum total steam

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loss amount and the total unknown steam amount. A ratio is simply a relationship between two quantities and expressed as a quotient of one divided by the other. Therefore, the calculating means disclosed by Fujiwara is able to calculate a ratio, a division of two quantities.

Also, Fujiwara does not disclose an inputting means for receiving, from a leakage diagnotor, a steam leakage diagnosis performed by the leakage diagnotor for diagnosing steam leakage from respective piping portions of the evaluation target steam piping; calculating means for calculating, based on the result of the steam leakage diagnosis inputted to the inputting means, a total steam leakage loss amount obtained by aggregating steam leakage loss amounts from the respective piping portions for the entire evaluation target steam piping.

Nagase discloses an inputting means (figure 17, element 23) for receiving, from a leakage diagnotor (figure 17, element 1), a steam leakage diagnosis performed by the leakage diagnotor for diagnosing steam leakage from respective piping portions of the evaluation target steam piping (paragraph 0073); calculating means for calculating (figure 17, element 17), based on the result of the steam leakage diagnosis inputted to the inputting means (figure 17, element 23), a total steam leakage loss amount obtained by aggregating steam leakage loss amounts from the respective piping portions for the entire evaluation target steam piping (paragraph 0095, line 7-11).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the inputting means and calculating means, as taught by Nagase, in

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the device of Fujiwara, so that the aggregating system for system diagnosis is able to calculate the total steam losses due to the malfunction of steam traps, as taught by Fujiwara, and due to the leakage of piping portions, as taught by Nagase.

**Regarding claim 9**, Fujiwara discloses the aggregating system for system diagnosis according to claim 7 or 8, wherein the method further comprises data generating means (figure 8, element 15; also see figure 2, element 7c) for generating evaluation data (figure 8, element A and B) based on the calculation results of the calculating means (paragraph 0094).

Fujiwara does not disclose that the evaluation data having contents indicative of at least the total unknown steam amount and the improvable unknown steam ratio.

The evaluation data generated by Fujiwara has a content indicative of the monetary converted value (A and B) of the total steam loss amount. It would be obvious to a person of ordinary skill in the art at the time of the invention was made to recognize that the total steam loss amount could also be include in the content indicative; thus, it would be obvious to include the relating result, the total unknown steam amount and the improvable unknown steam ratio, in the evaluation data.

***Response to Arguments***

10. Applicant's arguments filed 12 August, 2009 have been fully considered but they are not persuasive.

Applicant argues that

a) Fujiwara is unable to provide the **ratio** of steam loss reduction that can be obtained by the predetermined facility improvements.

b) Agata fails to disclose that the difference ( $Q_i - Q_o$ ) between the total receiving steam amount  $Q_i$  and the total necessary steam amount  $Q_o$ .

c) Agata fails to disclose that the steam loss occurring in the facility (total unknown steam amount ( $Q_x$ ) includes the steam loss that can be cancelled by the predetermined facility improvements (total improvable steam loss amount ( $Q_x - Q_{xx}$ ) and the steam loss that cannot be cancelled by the predetermined facility improvements (total basis unknown steam amount  $Q_{xx}$ ).

Regarding applicant's argument (a), the limitation "ratio of steam loss reduction" is not presented in any of the independent claims. In the examiner's rejection, the use of a steam ratio in a system is taught by Agata (as applied in claim 1). It is used as an example of how steam values are used to determined steam ratio occurs in a system.

Regarding applicant's argument (b), in figure 4 of Agata, see also paragraph 0081, it first calculated the steam used in step S1 [ $Q_o$ ] and then calculated the steam generated in step S2 [ $Q_i$ ]. Agata does not explicitly calculate their difference, however,

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calculating the difference only required routine skill in the art. Knowing the difference would allow an operator to generate a minimum steam amount that an apparatus used. As such, avoiding excessive steams being generated, thus saves money.

Regarding applicant's argument (c), the Examiner does not rely on Agata to teach the limitation as appear in argument (c).

The above are taught in Fujiwara, see claim 1. Also see, Fujiwara paragraph 0087.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 6,880,128 to Nguyen teaches an equipment evaluating system for evaluating steam traps.

U.S. Patent No. 6,332,112 to Shukunami et al. teaches a device and processing unit for detecting and calculating vibration of steam traps.

U.S. Patent No. 5,535,136 to Standifer teaches an apparatus and method for quantifying a leak flow rate from a fluid leak site in a piping system.

U.S. Patent No. 4,898,022 to Yumoto et al. teaches a detector for detecting a steam trap operation.

U.S. Patent No. 4,788,849 to Yonemura et al. teaches a device for monitoring steam trap.

U.S. Patent No. 4,727,750 to Yonemura teaches a device for detecting steam leakage.

U.S. Patent No. 4,039,846 to Vance teaches an apparatus for controlling steam-heating power plant

U.S. Patent No. 3,827,283 to Lerner et al. teaches an apparatus for measuring fluid leakage.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manko Cheung whose telephone number is (571) 270-7917. The examiner can normally be reached on Monday to Thursday, 9:00-16:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M.C./

December 30, 2009

**Drew A. Dunn**  
**/Drew A. Dunn/**  
**Supervisory Patent Examiner, Art Unit 2863**